Progress Report No. 15

Title: A Study of the Early Detection of Insect Infestations and Density/Distribution of Host Plants.

Citrus Insects Research
USDA, ARS
509 West Fourth St., Weslaco, Texas 78596

Period: April 1-30, 1974

EREP Investigation No. 319
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(A) During April we clocked 9 hours of flying over the test sites. Scattered clouds seriously hampered the photography of the flight lines for the mapping effort. The opportunity to visit NASA, Houston and preview the Skylab 4 photography of our area was appreciated. The detail that was immediately evident from the S-190B data made it obvious that we will be able to extract valuable and more precise knowledge about agriculture than has been obtained previously from satellite data collection systems. The first S-190B data of our area demonstrated that citrus groves as small as 2 acres can be identified on the color film and 10 acres on the color IR. We can distinguish the difference between sugar cane and citrus which is important in crop inventory and defining citrus host plant distribution and density. We can see chlorotic problems in sugar cane, as well as freeze damage. Vegetable crops, sugar cane and citrus are readily distinguishable. Partially harvested cabbage can be readily identified. Additional detail will be developed as we have more time to study the data.

(B) The resolution evident from this data assures the potential for accomplishing the experimental objectives. Adequate coverage of the area is the only remaining factor that would limit the success of the study.

(C) Throughout the next period we will continue to evaluate the S-190B data. There is a vast amount of information in each photograph and it will take considerable time to develop all the information contained therein.

(D) The results obtained with Skylab photography on 2 separate passes with a freeze sandwiched between indicates that sequential photos of the same area offer valuable potential for identification of crops and the distribution of them. Information was also evident on reclaiming of brush land, density of citrus plantings, identification of sugar cane, detection of chlorosis in sugar cane and identification of vegetable and grain crops. The resolution and detail obtained make it obvious that many insect and disease problems on crop plants would be detectable.

(E) The remaining effort will be devoted to relating ground truth, aircraft and satellite data. The outlook is promising for a valuable yield of information in practical areas of investigation.

(F) M. R. Davis traveled to Houston to view Skylab data, other travel was concerned with gathering of ground truth information and aircraft data.